

Products Liability Impacts on US Childhood Vaccine

Markets

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Pfizer Inc

Two “Old” Articles

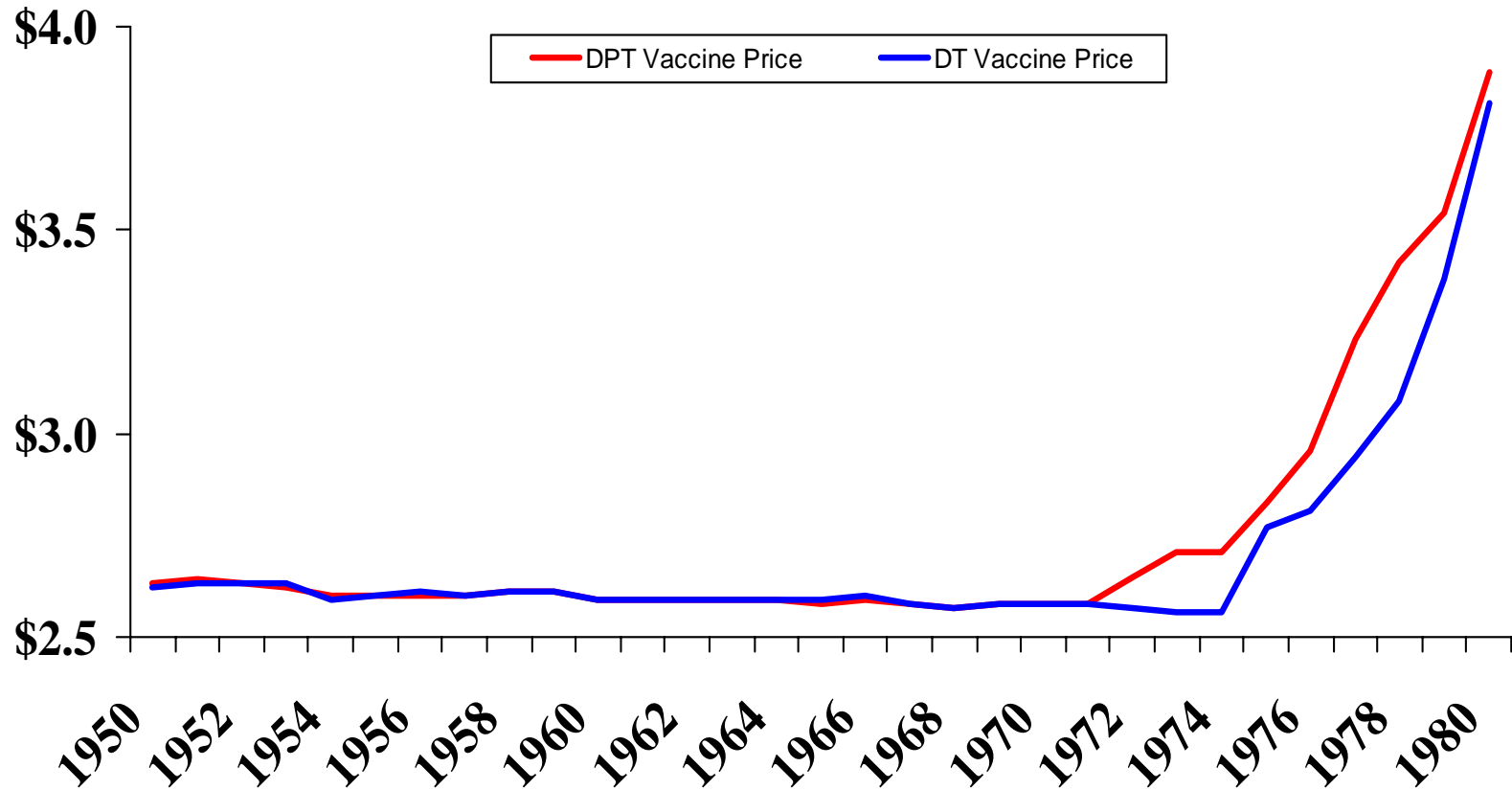
- Changing Rules in Tort Law and the Market for Childhood Vaccines
 - *Journal of Law and Economics*, 1994
- Is the Insurance Aspect of Producer Liability Valued by Consumers?
 - *Journal of Risk and Uncertainty*, 1996

Childhood Vaccine Market 1950 to 1989

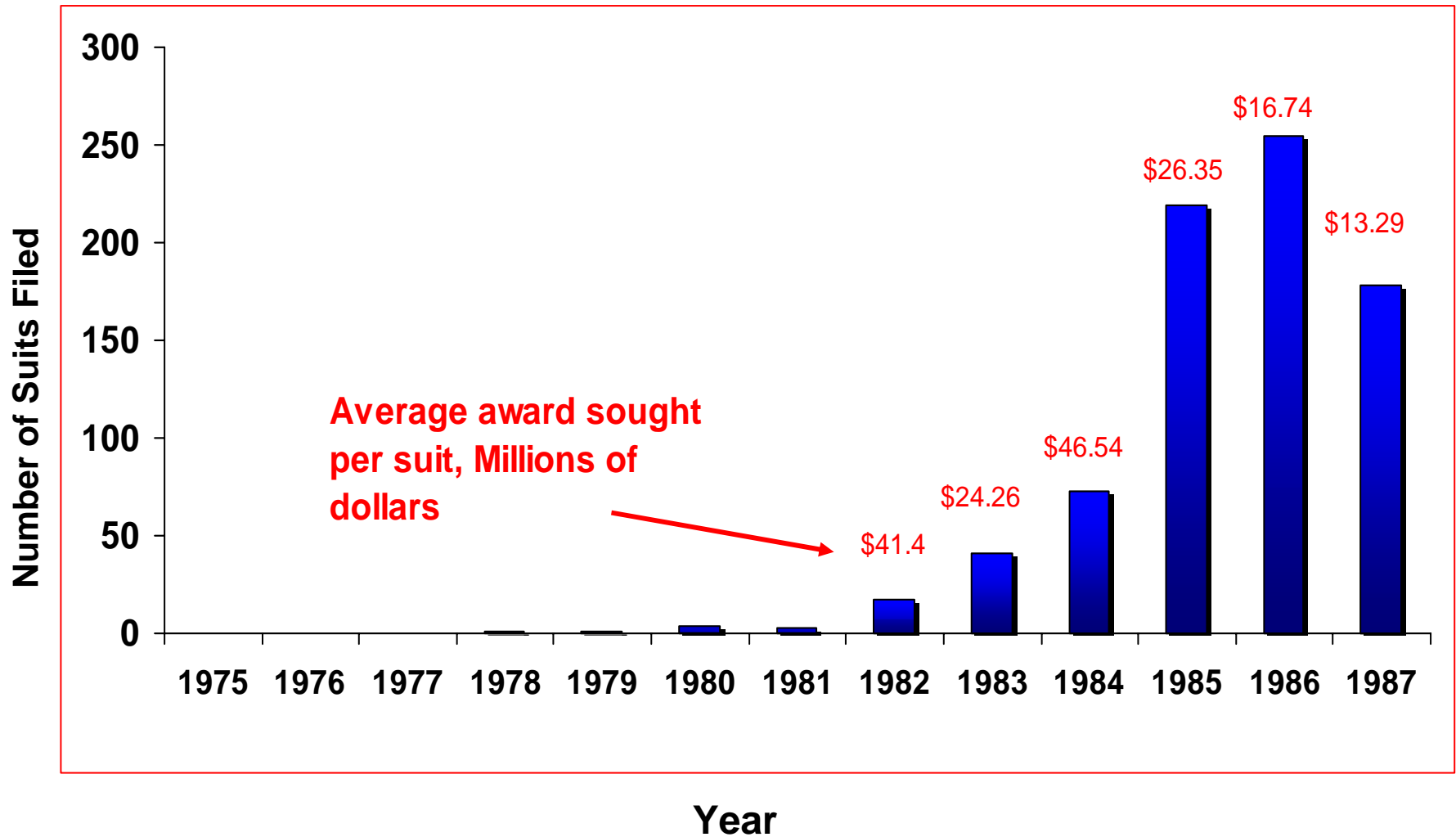
Vaccine	Commercial Introduction
DPT	Early 1950's
DT	Early 1950's
Polio (live virus, OPV)	1964
Measles	1964
Mumps	1969
Rubella	1970

DPT and DT Prices Before 1980

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Magnitude of DPT Vaccine Litigation in USA



Statistical Estimation of Liability Impact on DPT Price

Journal of Law and Economics, April 1994

- Linear regression of DPT price on four explanatory variables:
 - Proxy for manufacturing and marketing cost (DT vaccine price)
 - Number of suppliers listed in Blue Book, Red Book
 - Cumulative number of suits filed for vaccine injury
 - Time trend
- Litigation explains virtually all the difference between DPT and DT prices
- Other effects not significant
- Simple model provides best explanation

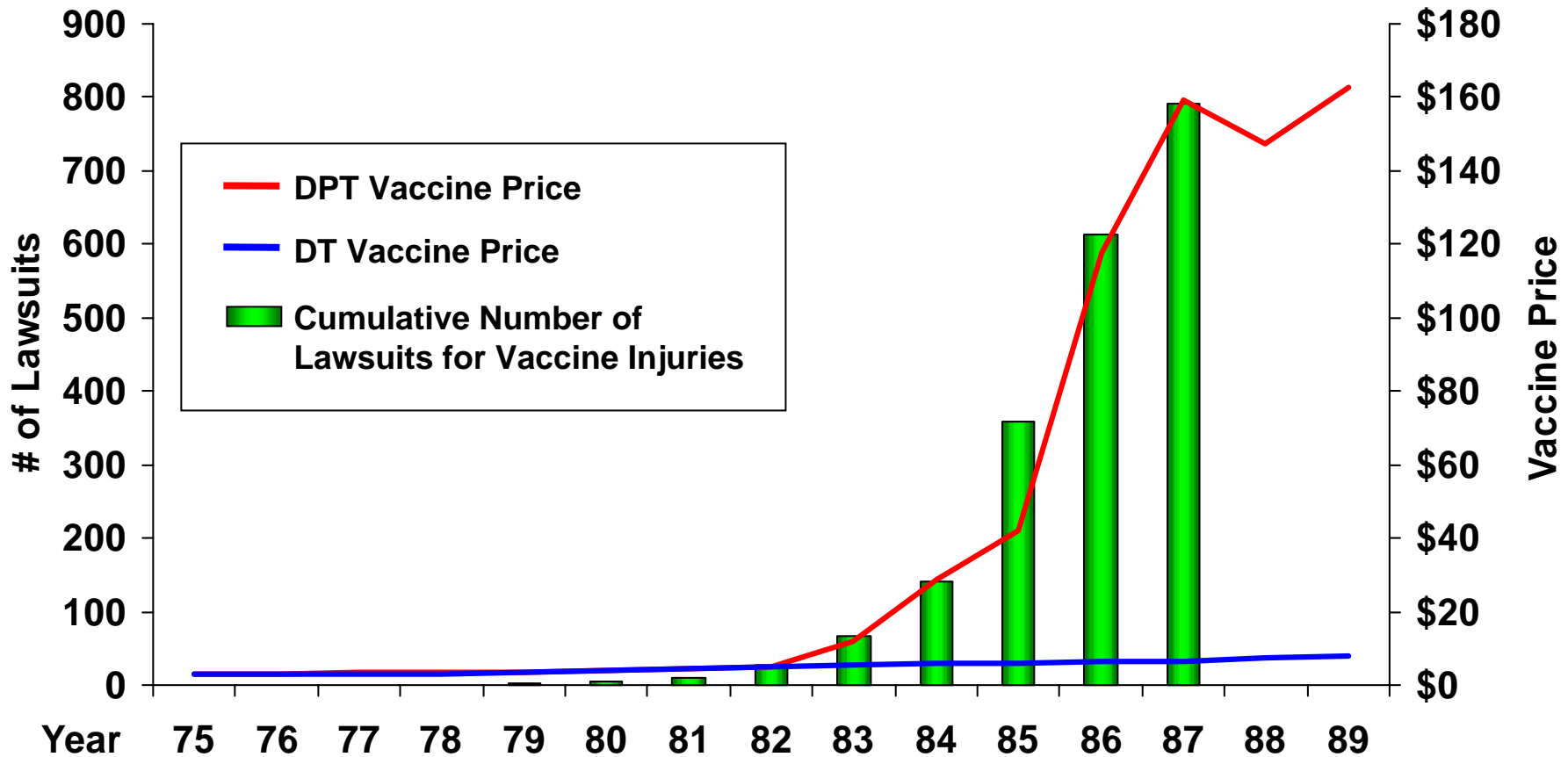
LINEAR ESTIMATION OF DPT PRICE

Dependent Variable: Inflation Adjusted DPT Price

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	-1.0553 (0.9580)	-1.0117 (0.9187)	9.4463 (5.5850)	-0.7435 (0.8706)	-0.7651 (0.8674)	6.2058 (5.3179)	4.5567 (6.1462)
DT Price	1.3488 (0.3749)	-0.1971 (0.8460)	-1.5143 (1.5446)	1.2484 (0.3399)	0.3944 (0.8309)	-0.6444 (1.4684)	-0.6809 (1.4855)
Cumul # of Suits	0.05381 (0.0015)	0.0570 (0.0020)	0.05746 (0.0024)	0.04964 (0.0019)	0.05205 (0.0029)	0.05256 (0.0029)	0.05323 (0.0032)
# of Firms	--	0.5679 (0.2814)	--	--	0.3192 (0.2836)	--	0.1803 (0.3259)
Time	--	--	-0.1933 (0.1014)	--	--	-0.1286 (0.09708)	-0.09828 (0.1124)
1987 Dummy	--	--	--	5.7899 (1.9307)	4.9342 (2.06803)	5.1160 (1.9763)	4.7915 (2.08184)
F	709.7	516.1	510.0	584.2	441.9	448.3	351.2
r ²	.9746	.9766	.9763	.9793	.9795	.9797	.9793
Durbin Watson	2.021	2.195	2.378	2.897	2.914	3.075	3.035
# of Obs.	38	38	38	38	38	38	38

Note: The dependent variable is the Diphtheria, Pertussis, Tetanus vaccine price taken from table 1 and deflated by the 1967 based Consumer Price Index as reported by the United States Commerce Department. Standard errors of parameter estimates are in parentheses.

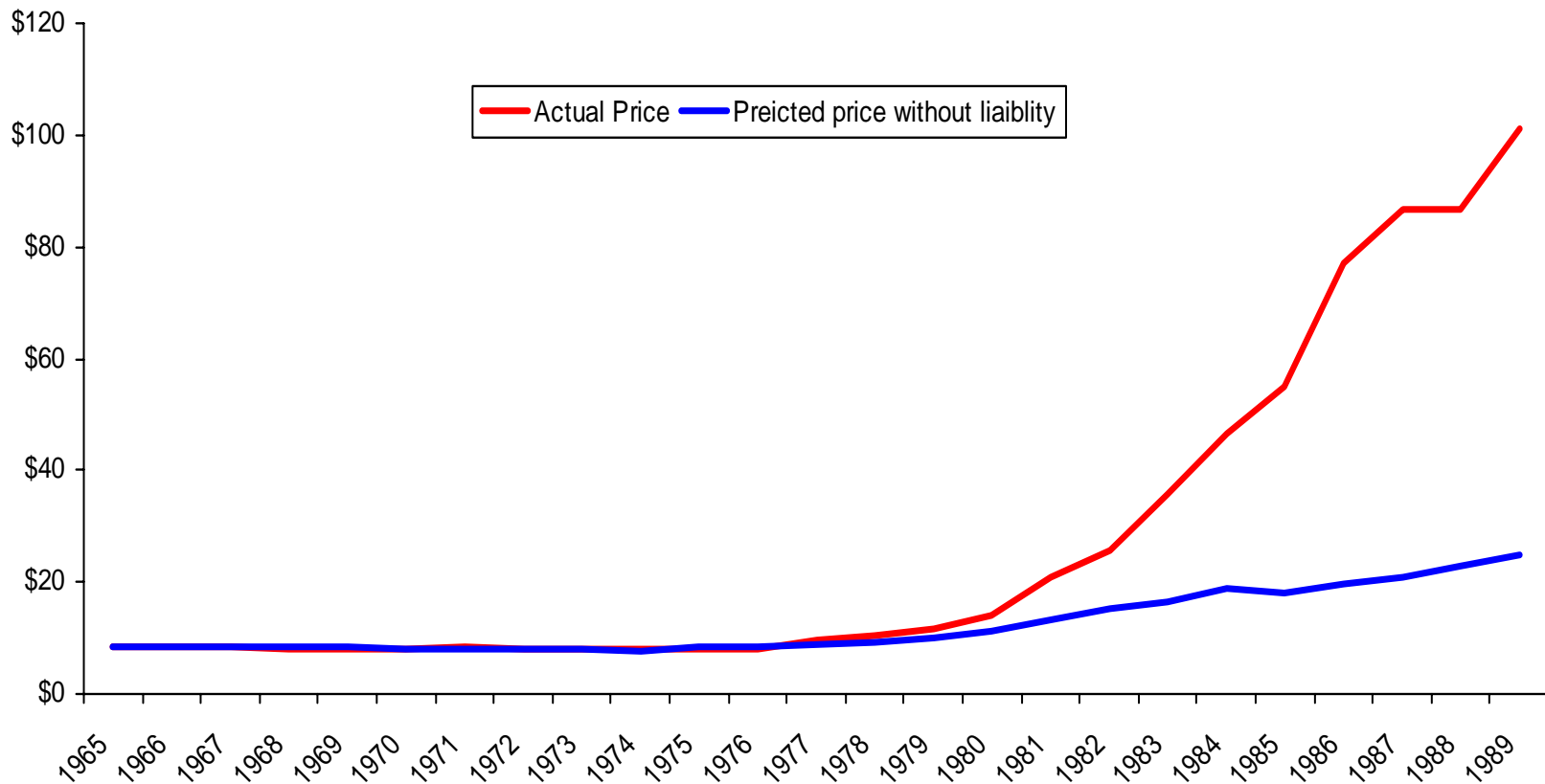
Vaccine Litigation Caused the Price of DPT to Skyrocket



Vaccine suppliers	DPT	4	5	5	5	6	4	4	3	3	4	2	1	2	2	2
	DT	4	6	5	5	6	5	4	4	4	4	5	5	6	6	5

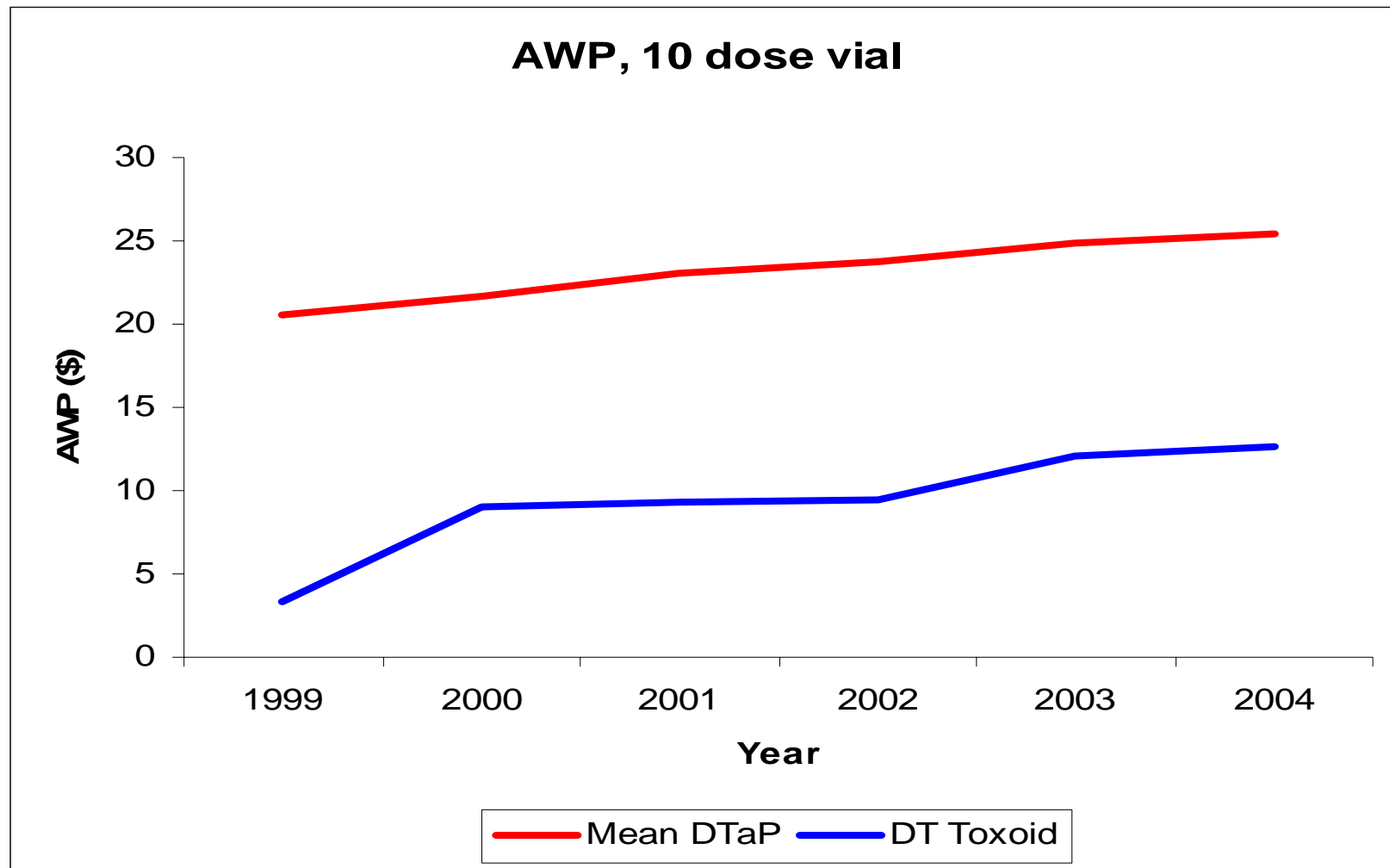
Estimated Liability Impact on Oral Polio Vaccine Price

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Source: Manning, *Journal of Law and Economics*, April 1994

DT and DTaP Pediatric Vaccine Prices, 1999 to 2004



Source: Drug Topics Redbook, various issues

US Tort System is Costly Means of Compensation

1986 Vaccine price
implies liability premium
of \$7.46 per dose

Average damage award
\$471,000

DPT Vaccine
Accident Frequency

Implied Cost per Dollar of
Compensation Awarded

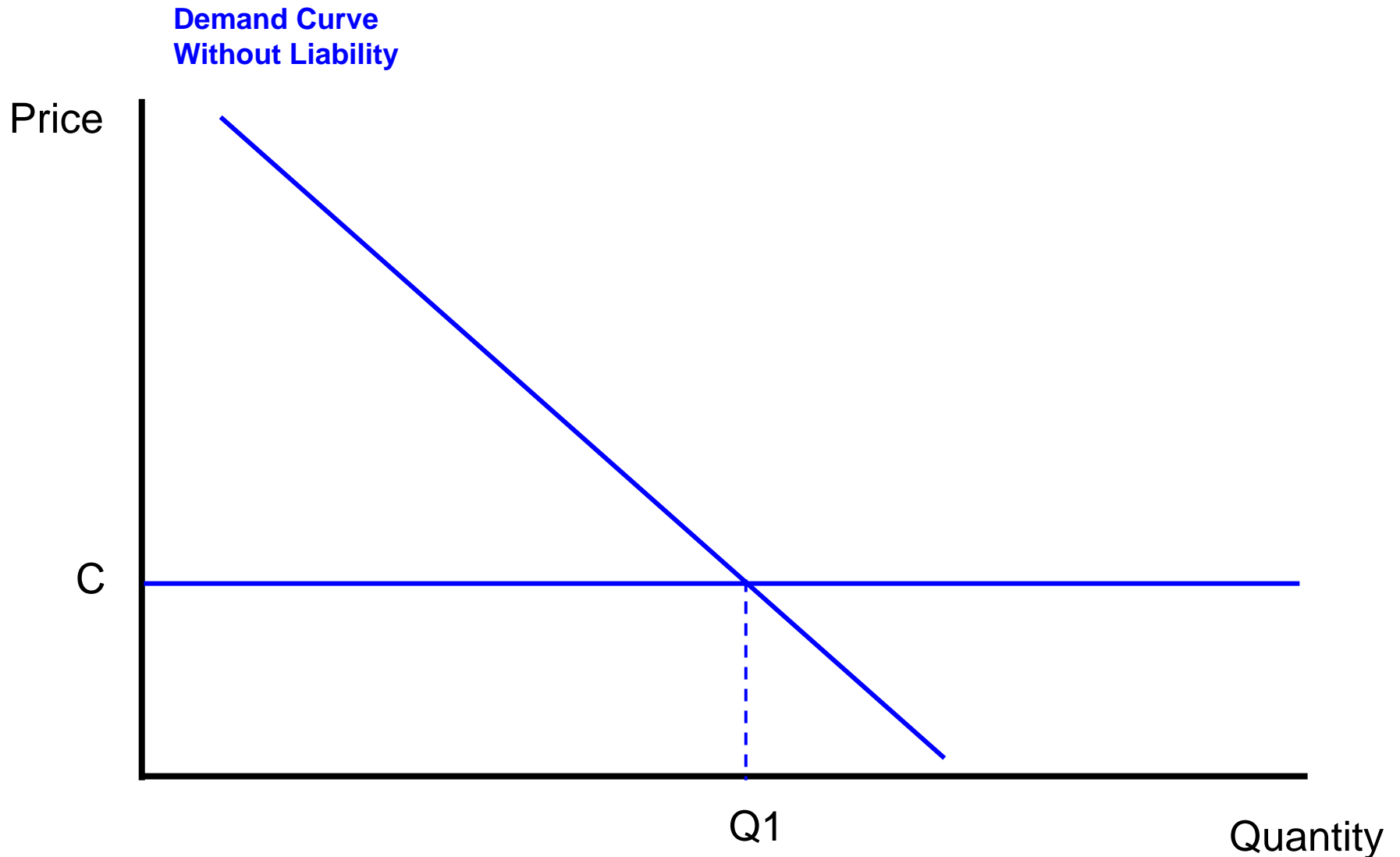
1 in 310,000

\$4.91

1 in 480,000

\$7.60

Hypothetical Vaccine Supply and Demand Relationships



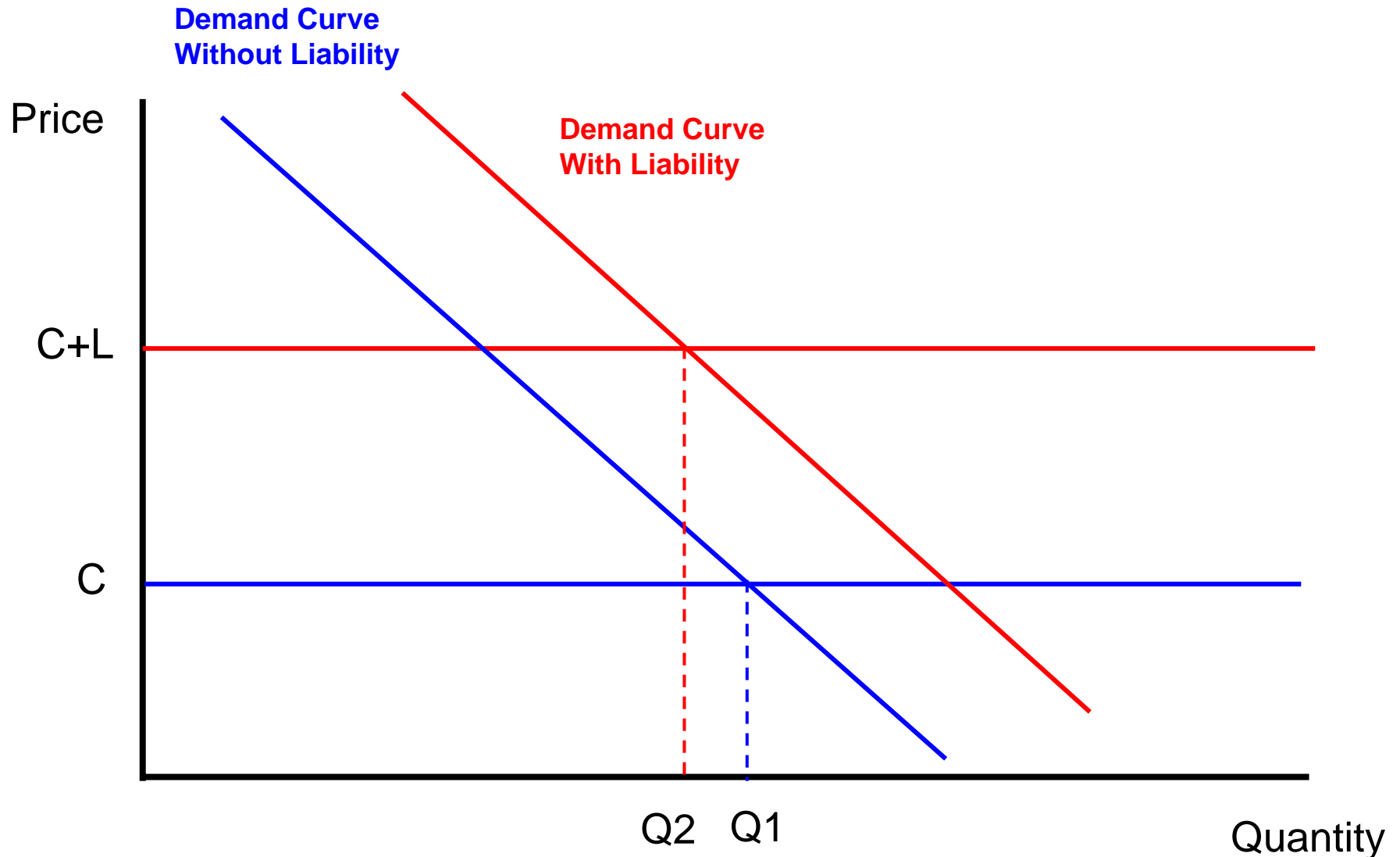
Vaccine Demand Specification

Model of vaccine demand:

$$\text{Vaxr} = a + b_1 \text{ Price} + b_2 \text{ Insur} + b_3 \text{ Disr} + b_4 \text{ School} + b_5 \text{ InsSch} + b_6 \text{ Liab} + e_1$$

$$\text{Disr} = q + d_1 \text{ Time} + d_2 (1/\text{Vaccine age}) + e_2$$

Hypothetical Vaccine Supply and Demand Relationships



Impact of Liability on Vaccine Use

“The best estimate is that by 1985, the change in [the] liability environment had reduced the number of children properly immunized with the DPT and polio vaccines by approximately 1 million.”

-- *Journal of Risk and Uncertainty*, 1996